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Jesuit Scientists and Mongolian Fossils: The French Paleontological Missions in China, 1923–1928

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Abstract: This essay examines the *Mission paléontologique française* of the 1920s, a series of scientific expeditions into the Ordos Desert in Inner Mongolia in which a team of Jesuit scholar-scientists worked with local collaborators to provide material for the Muséum d'Histoire Naturelle in Paris. The case study shows that the global and colonial expansion of Western science in the early twentieth century provided space for traditional scientific institutions, such as universalizing metropolitan collections and clerical scholarly networks, to extend their research projects. The linking of approaches, agendas, and geographic regions was facilitated by the concepts and practices of the deep-time sciences of geology, paleontology, and human prehistory. These were based on the interchange of expertise, common projects of unveiling the development of life, and the alignment of different regions and specimens. Moreover, the expeditions did not just conduct research based around global movement and transmission. They also conceptualized the ancient development of life in terms of movement, migration, and exchange. The act of forming research networks that linked Asia and Europe also led scientists to conceive of these regions as bound by deep natural processes. Circulation and transfer became important actors' categories used to understand the origins and history of life.

In the Gallery of Paleontology at the Muséum d'Histoire Naturelle in Paris, one ascends the scale of life. The displays move through the earliest invertebrates, the ancient fish, the amphibians, the giant reptiles, the early mammals, the great beasts of the Tertiary, and, finally, at the summit, humans. The gallery was constructed in 1898 to illustrate the teleological theories

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of Albert Gaudry, then Chair of Paleontology at the Muséum, showing life unfolding with harmonious regularity across geological time. Many of the specimens had come from far beyond France: a mounted skeleton of the Megatherium, the great ground sloth of South America, was a prized exhibit; fossil equids and proboscideans excavated by Gaudry in Greece were placed around the gallery; and in 1908 a cast of *Diplodocus carnegeii*, a huge North American sauropod dinosaur donated by the industrialist Andrew Carnegie, was unveiled, creating a great sensation.

About two-thirds of the way along the gallery, and quite likely overshadowed by these more spectacular prehistoric monsters, is the skeleton of a rhinoceros. This is a woolly rhinoceros, and (unlike the *Diplodocus*) it is an original specimen, sent from Inner Mongolia in 1926. The specimen's rather serene mounting belies the difficulty of its excavation and acquisition, which reflected the simultaneously expanding yet fraught agendas of the early twentieth-century field sciences. The coming of the rhinoceros—unearthed by Jesuit scholar-scientists and Mongol villagers and sent to Paris under the terms of a centrally patronized expedition—reflected the expansive reach of scientific endeavor in this period. However, though it was an impressive specimen of a Pleistocene rhinoceros, it was disappointing in terms of what had been hoped for from these expeditions, which aimed to discover whether Asia was the place of humanity's original development. The Chinese rhinoceros was the final offering in a collaboration that, while it ultimately broke down, had bound together a variety of actors to link Paris with the Ordos Desert.

The history of science, and particularly the history of science in global and colonial contexts, has moved in recent years to perspectives based on movement and circulation.[1] Largely rejecting models of the "diffusion" of scientific knowledge from metropolitan centers to undeveloped peripheries or instrumentalist notions that science operated principally as a tool of imperial authority, new models emphasizing local collaboration and the transmission of knowledge and material have come to the fore. An image is being built up of scientific activity depending on the global transfer of a whole range of things—people, objects, texts, and ideas—over the interconnected modern era. This was of course not a simple process, and transferal was frequently marked by imbalances, difficulties, and competing agendas. Fa-ti Fan, for example, has argued that "what is called 'circulation' may have been really a series of negotiations, pushes and pulls, struggles, and stops and starts."[2] Collaboration and negotiation, but also conflict and competition, were key aspects of the global expansion of scientific work.

The French paleontological missions to China in the 1920s offer an interesting case study to highlight some new dynamics within these frameworks. The first is that much of this recent literature has avoided French developments (with some exceptions for the eighteenth and early nineteenth centuries), focusing primarily on networks based around the British Empire or the United States. The expansion of French science is still often understood in terms of core/periphery relationships or colonialist ideology. This emphasis has perhaps been understandable on a historiographic level, given the strong place of science within the colonial "civilizing

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[1] For key works see James Secord, "Knowledge in Transit," *Isis*, 2004, 95:654–672; Bernard Lightman, Gordon McOuat, and Larry Stewart, eds., *The Circulation of Knowledge between Britain, India, and China: The Early-Modern World to the Twentieth Century* (Leiden: Brill, 2013); Simon Schaffer *et al*., eds., *The Brokered World: Go-Betweens and Global Intelligence, 1770–1820* (Sagamore Beach, Mass.: Science History, 2009); and Neil Safier, "Global Knowledge on the Move: Itineraries, Amerindian Narratives, and Deep Histories of Science," *Isis*, 2010, *101*:133–145.

[2] Fa-ti Fan, "Circulating Material Objects: The International Controversy over Antiquities and Fossils in Twentieth-Century China," in *Circulation of Knowledge between Britain, India, and China*, ed. Lightman *et al.*, pp. 209–236, on p. 210. The "diffusion" model was put forward most prominently by George Basalla, "The Spread of Western Science," *Science*, 1967, *156*:611–622.

mission" and ideological secularism of the Third Republic and the frequently asserted centralization of French science around Paris and the state.[3] However, while French central collections retained significant conceptual privilege and inherited prestige, they nonetheless had to rely on independent-minded local actors. Global circulation with a French dimension therefore can provide a case study where the relations between collaboration and competition were particularly marked, illustrating both the strategies used by metropolitan institutions to maintain their authority and the sorts of techniques deployed by local actors to interest this central authority—either collaborating with it, attempting to gain patronage, or testing its limits.

A focus on French developments also allows a greater appreciation of longer trajectories within globally oriented European science. Large centralizing collections like the Muséum d'Histoire Naturelle—which aimed at the comprehensive cataloguing of all of nature—are often taken as more characteristic of Enlightenment or early nineteenth-century science than of the more diffuse and specialized drives of the twentieth century. Indeed, the persistence of such institutions in France has sometimes been held to indicate the "relative decline" of French science in the face of Anglophone and German competitors.[4] However, institutions like the Muséum retained considerable prestige and importance, despite often fighting a rearguard action against newer competitors. Not just declining holdovers from past periods of scientific development, these institutions could still be important actors in the twentieth century. Indeed, the increasing international scope and global extension of science could give established institutions like the Muséum an opportunity to defend their positions and even expand, taking advantage of inherited prestige, national and international links, and their large comparative collections to gain allies and accumulate more material within new research projects.

Universal museums were not the only "traditional" institutions that persisted into the twentieth century. This period also saw the continued activity, and possibly even resurgence, of Catholic scholarship, which became reconciled with state institutions after earlier struggles over secularization. Lewis Pyenson's study of French Jesuit activity in the "exact sciences" like physics and astronomy argues that clerical scholars formed important institutions in these years, especially in French colonies, which then engaged in "complicated negotiation" with imperial agencies. While Pyenson sees this as generally resulting in "the progressive assimilation of [Catholic] institutions by imperial functionaries in Paris," and indeed the clerical networks eventually became subordinated to the wider French imperial project, this was not the only possible outcome.[5] Clerical scholars continued to assert their autonomy across this period and

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[3] For work engaging with French developments in the eighteenth and early nineteenth centuries see Margaret Meredith, "Friendship and Knowledge: Correspondence and Communication in Northern Trans-Atlantic Natural History, 1780–1815," in *Brokered World*, ed. Schaffer *et al.* (cit. n. 1), pp. 151–191; Emma Spary, "Self Preservation: French Travels between *Cuisine* and *Industrie*," *ibid.*, pp. 355–386; and Bettina Dietz, "Mobile Objects: The Space of Shells in Eighteenth-Century France," *British Journal for the History of Science*, 2006, 39:363–382. On the role of science in the Third Republic see Patrick Petitjean, "Science and the 'Civilizing Mission': France and the Colonial Enterprise," in *Science across the European Empires, 1800–1950*, ed. Benedikt Stuchtey (Oxford: Oxford Univ. Press, 2005), pp. 107–128. Regarding the centralization of French science see Harry Paul, *From Knowledge to Power: The Rise of the Science Empire in France, 1860–1939* (Cambridge: Cambridge Univ. Press, 1985); and Michael Heffernan, "A State Scholarship: The Political Geography of French International Science during the Nineteenth Century," *Transactions of the Institute of British Geographers*, 1994, *19*:21–45. This idea has, however, recently been critiqued in Robin Fox, *The Savant and the State: Science and Cultural Politics in Nineteenth-Century France* (Baltimore: Johns Hopkins Univ. Press, 2012).

[4] Joseph Ben-David, "The Rise and Decline of France as a Scientific Centre," *Minerva*, 1970, 8:160–179; this view is problematized in Harry Paul, "The Issue of Decline in Nineteenth-Century French Science," *French Historical Studies*, 1972, 7:416–450.

[5] Lewis Pyenson, *Civilizing Mission: Exact Sciences and French Overseas Expansion, 1830–1940* (Baltimore: Johns Hopkins Univ. Press, 1993), pp. 14–15.

contributed to a range of fields, including meteorology, astronomy, natural history, and (especially important for this article) the deep-time sciences of geology, paleontology, and human prehistory.

The deep-time sciences were disciplines intrinsically based on long-distance interaction and negotiation.[6] Locating and unearthing fossils and other specimens required local knowledge of sites and geological formations, as well as long periods of residency to conduct excavations. Yet despite the importance of fieldwork, these were also subjects structured around central control and accumulation. Once fossils or archaeological objects had been excavated, they had to be transported to large collections to be compared with other specimens from across time and around the world in order to be classified and understood. The discipline very much followed Bruno Latour's model of science being pursued through "cycles of accumulation," with large central storehouses conventionalizing information and data. However, agents on the ground maintained considerable power over specimens and sites. As argued by Jeremy Vetter in the American context, the claims of the paleontological fieldworker were constantly posed against authority deriving from control over large museum collections.[7] Where power lay, and how objects should be gathered and interpreted, was persistently debated, and this process was key to giving fossils and artifacts meaning.

The deep-time sciences reconciled not only different statuses, practices, and objects but also different concepts and modes of reasoning. Reconstructing organisms, environments, and developmental trends mixed conventionalized analysis with imaginative conjecture. As Claudine Cohen has noted, the deep-time sciences valued "not only observation and rationality, but also wisdom and intuition, fiction and imagination," with research projects often informed by mythic conceptions and deeper traditions. Geology and paleontology were meeting-ground sciences, as personnel with often starkly different backgrounds cooperated in service of the central goal of uncovering the history of the Earth and life. Interaction between naturalistic and religious contexts was especially significant. Much of the recent history of the Earth sciences has moved against simplistic conflict narratives, and Martin Rudwick has forcefully drawn attention to the large contribution that Christian scholars made to the formation of deep histories of the Earth in the early modern period.[8] However, the continuation of religious contributions in these fields in the twentieth century demonstrates not just the long duration of religiously informed science but also its continued impact on ideas of development and ancient life.

The French paleontological missions show how such longer-term traditions in scientific work persisted and expanded in the early twentieth century, with the concepts and agendas of the deep-time sciences providing a particularly strong opportunity for coalescence. In the expeditions to Inner Mongolia, Parisian institutions were engaged in a research project with Jesuit scholar-scientists and their local collaborators, aiming to uncover the origins of life. This small group of actors attempted to maintain French scientific preeminence by mixing traditional and novel research strategies. While often running into difficulties and tensions, the *Mission paléontologique française* illustrates the continued dynamism and activity of older institutions within the shifting and interconnecting global context of the early twentieth century.

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[6] Juan Pimentel, "Across Nations and Ages: The Creole Collector and the Many Lives of the *Megatherium*," in *Brokered World*, ed. Schaffer *et al.* (cit. n. 1), pp. 321–354; Irina Podgorny, "Fossil Dealers, the Practices of Comparative Anatomy, and British Diplomacy in Latin America, 1820–1840," *Brit. J. Hist. Sci.*, 2013, *46*:647–674; and Thomas Anderson, "*Aepyornis* as Moa: Giant Birds and Global Connections in Nineteenth-Century Science," *ibid.*, pp. 675–693.

[7] Bruno Latour, *Science in Action* (Cambridge, Mass.: Harvard Univ. Press, 1987), pp. 215–257; and Jeremy Vetter, "Cowboys, Scientists, and Fossils: The Field Site and Local Collaboration in the American West," *Isis*, 2008, 99:273–303.

[8] Claudine Cohen, *La méthode de Zadig: La trace, le fossile, la preuve* (Paris: Seuil, 2011), p. 25; and Martin Rudwick, *The Earth's Deep History: How It Was Discovered and Why It Matters* (Chicago: Univ. Chicago Press, 2014).

This instance of collaboration and negotiation also shows how the practices, theories, and organization of global scientific activity flowed together. The project of cross-continental scientific exploration was not just based on the transmission of scientific objects between Asia and France but also aimed to show the migration of animals and cultures deep in the past. The participants in the *Mission paléontologique française* compared the ancient life of East and Central Asia with that of Western Europe and linked new scientific theories with myth and religion. Movement and circulation were not just crucial to the practices of science: they also became actors' categories, as deep evolutionary history was conceptualized by the researchers involved in the project in terms of migration, exchange, and movement. The act of forming global linkages bolstered ideas that nature and life's history were also defined by the movement and exchange of animals and cultures. In part, this grew from the colonial practices inherent in the project, which collected objects from far afield to place in metropolitan collections and conceptualized the finds in terms of grand processes of migration and their relations with Europe. In the process, however, strong arguments were made for the importance of Asian artifacts and localities, which began to destabilize the importance of Europe. The expansion of research, and the principles underlying it, gave actors based outside Europe increasing power and authority and led to assertions that other regions had been important centers in their own right.

THE FRENCH DEEP-TIME SCIENCES AND JESUIT NETWORKS

The French paleontological missions linked institutions with roots in older scientific traditions, which were attempting to maintain status in the changing international context of the early twentieth century. The first of these was a large universalizing museum, the Muséum d'Histoire Naturelle, centered on the Jardin des Plantes in Paris. The Muséum had been one of the primary centers of natural history since the late eighteenth century, following a research trajectory that aimed to control and accumulate specimens and develop French authority across a host of fields. It became particularly important as a center of paleontology. Indeed, the sizable literature on the deep-time sciences in France emphasizes the centrality of the Muséum and its staff. Georges Cuvier, Chair of Comparative Anatomy between 1802 and 1832, is widely cited as establishing paleontology's profile and many of its key notions, particularly extinction. Beyond the Muséum, French researchers were also instrumental in using concepts of deep time to understand human development. French sites and scholars were critical for the "establishment of human antiquity" in the mid-nineteenth century; the latter elaborated a long series of prehistoric eras through the study of sites in France and beyond. Human prehistory in this early period was also often deployed in militant anticlerical and materialist ideology, typified in the work of Gabriel de Mortillet, the leading prehistorian of the late nineteenth century.[9] Paleontology and prehistory were well entrenched in France and were deployed for both national prestige and ideological purposes.

By the first decades of the twentieth century, paleontology and prehistory retained national and ideological importance but had become more synthetic and somewhat defensive. The dominant figure at this time, Marcellin Boule, built up a formidable position through a

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[9] On the role of the Muséum see Richard Burkhardt, Jr., "The Leopard in the Garden: Life in Close Quarters at the Muséum d'Histoire Naturelle," *Isis*, 2007, 98:675–694. On Cuvier's role in establishing paleontology's profile see Martin Rudwick, *Georges Cuvier, Fossil Bones, and Geological Catastrophes: New Translations and Interpretations of the Primary Texts* (Chicago: Univ. Chicago Press, 2008); and Toby Appel, *The Cuvier–Geoffroy Debate: French Biology in the Decades before Darwin* (New York: Oxford Univ. Press, 1987). On French prehistory see Arnaud Hurel, *La France préhistorienne de 1789 à 1941* (Paris: CNRS, 2007); and Michael Hammond, "Anthropology as a Weapon of Social Combat in Late-Nineteenth-Century France," *Journal of the History of the Behavioral Sciences*, 1980, *16*:118–132.

mixture of abrasiveness, appeals to the public, and canny network building. Boule rose through the ranks in the Muséum to succeed Gaudry as Chair of Paleontology in 1903. He built his scientific reputation as a leading expert on the Pleistocene, focusing on the animals and human types of the relatively recent Ice Ages. He also gained a well-resourced patron in Prince Albert I of Monaco, who donated 1.6 million francs to establish the Institut de Paléontologie Humaine (IPH) in Paris—intended as the first institution in the world to deal exclusively with human evolutionary studies—with Boule as the director. The IPH was opened in 1921, in the presence of the prince and President Millerand.[10]

For Boule, paleontology and human prehistory demonstrated French intellectual leadership of important scientific fields and had strong ideological implications. His most famous scientific work—which garnered substantial public and international interest—was his 1911 reconstruction of the Neanderthal of La-Chapelle-aux-Saints as a brutish aberrant form separate from the main stem of human development. Drawing on Lamarckian and progressivist notions, Boule regarded evolution as leading to improvement and "the triumph of spirit over matter," as higher and more elevated types succeeded older, primitive, and aberrant forms.[11] Deep-time studies were used to show progress across nature, continuing into human culture.

Boule was not simply invested in building authority in Paris. He also forged links with clerical scholars who had been marginalized by the secularism of earlier prehistoric research. His key collaborator, Henri Breuil, was a priest from Normandy who became the second-in-command at the IPH and also benefited significantly from Albert I's patronage.[12] Breuil mainly focused on Paleolithic human cultures and became the world authority on European cave art through researching newly discovered sites in France, such as Font-de-Gaume, and authenticating known but doubted localities like Altamira in Spain. These sites, as well as being artistically striking, were valued as gateways into the spiritual and cultural condition of early humans. For Breuil and many other contemporaries, the fully developed representative art in the caves of southern Europe demonstrated the sudden appearance of human consciousness, creative activity, and religious belief. Far from divorcing human development from religious conceptions, Breuil used prehistory to argue for an innate spark in human origins.

The early twentieth century was therefore a time of significant institution building in the French deep-time sciences. However, it was also a time when French preeminence in these fields was coming under threat. While the paleontological collections in Paris were vast, their expansion was relatively limited in this period. This was partly for geological reasons: French formations contained impressive Pleistocene remains, early mammals from the Eocene, and extensive records of Jurassic marine life. However, the later decades of the nineteenth century saw more dramatic discoveries being made overseas, particularly in the United States, where fossil-hunting expeditions to the American West delivered spectacular dinosaurs and strange

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[10] For the history of the IPH see Henry de Lumley and Arnaud Hurel, eds., *Cent ans de préhistoire: L'Institut de paléontologie humaine* (Paris: CNRS, 2011).

[11] Marcellin Boule, "La guerre et la paléontologie," in *Les Allemands et la science*, ed. G. Petit and M. Leudet (Paris: Alcan, 1916), pp. 33–46, on p. 44. For background see Michael Hammond, "The Expulsion of the Neanderthals from Human Ancestry: Marcellin Boule and the Social Context of Scientific Research," *Social Studies of Science*, 1982, *12*:1–36; and Marianne Sommer, "Mirror, Mirror on the Wall: Neanderthal as Image and 'Distortion' in Early Twentieth-Century French Science and Press," *ibid.*, 2006, 36:207–240.

[12] Breuil has recently been the subject of Arnaud Hurel, *L'abbé Breuil: Un préhistorien dans le siècle* (Paris: CNRS, 2011). On the links forged between Boule and clerical scholars see Fanny Defrance-Jublot, "Question laïque et legitimité scientifique en préhistoire, la revue 'L'Anthropologie' (1890–1910)," *Vingtième Siècle*, 2005, 87:73–84; and Hurel, *La France préhistorienne de 1789 à 1941* (cit. n. 9).

prehistoric mammals. By the 1900s, American museums, such as the American Museum of Natural History, the Field Museum, and the Carnegie Museum, competed to locate and mount huge dinosaur specimens and threatened to outshine the Jardin des Plantes.[13]

Paleontology's agenda of reconstructing the whole history of life made this international context particularly significant. European and American paleontologists were in close contact with one another and conducted numerous expeditions overseas.[14] Many of these went to Africa and South America, but by the 1920s Asia was regarded as the most important gap in research. This was not just due to a lack of Asian fossils in Western collections but also drew from older mythic traditions. Biblical concepts had placed the creation of animals and humans in inner Asia, and in the early twentieth century these ideas were recast in a new evolutionist idiom.[15] Commonalities between the prehistoric fauna of Europe and North America (which shared horses, mammoths, bison, camelids, wolves, and elephants) implied that the whole Northern Hemisphere had been a single zone of development. Asia was therefore given a critical role as either a migration route or—potentially—the source of all these lineages. A strong hypothetical possibility therefore existed that the first humans had also originated in Asia, which increased the importance of these projects dramatically. These theories were forcefully presented in the United States by William Diller Matthew and Henry Fairfield Osborn at the American Museum of Natural History.[16] In France, both Boule and Breuil also theorized a possible Asian origin for Pleistocene animals and prehistoric human cultures. An agenda was therefore laid for research in Central Asia to uncover the diffusion of life.

While French paleontologists and prehistorians were adopting increasingly global conceptualizations, the French Jesuits exhibited a different, yet also expansive, scientific tradition. A huge amount of attention has focused on the scholarly activity of the Jesuit Order in the early modern period, presenting Jesuit scholarship as a key part of the intellectual transformations of the era, both in new disciplines and in knowledge of the world beyond Europe. Jesuit spiritual devotion was linked with scholarly work and connected study of the natural world with the promotion of religious authority. Key to this were principles of "contemplative action," which regarded study as a form of prayer and aimed to locate the presence of the divine throughout Creation. The spread of knowledge was also a part of Jesuit evangelization overseas, which was often based on "top-down" strategies of instilling enlightened Catholicism among elites, be they Native American notables or Chinese scholar-gentry. As Steven Harris has argued, studies of "Jesuit overseas science offer the historian a number of opportunities to link history of science to institutional history, history of religion, colonial history, and comparative or multicultural history of indigenous peoples."[17]

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[13] Paul Brinkman, *The Second Jurassic Dinosaur Rush: Museums and Paleontology in America at the Turn of the Twentieth Century* (Chicago: Univ. Chicago Press, 2010); and Lukas Rieppel, "Bringing Dinosaurs Back to Life: Exhibiting Prehistory at the American Museum of Natural History," *Isis*, 2012, *103*:460–490.

[14] The range of these is discussed in Eric Buffetaut, *A Short History of Vertebrate Palaeontology* (London: Croom Helm, 1987), pp. 162–191.

[15] Colin Kidd, *The Forging of Races: Race and Scripture in the Protestant Atlantic World, 1600–2000* (Cambridge: Cambridge Univ. Press, 2006); and Robin Dennell, "From Sangiran to Olduvai, 1937–1960: The Quest for 'Centres' of Hominid Origins in Asia and Africa," in *Studying Human Origins: Disciplinary History and Epistemology*, ed. Raymond Corbey and Wil Roebroeks (Amsterdam: Amsterdam Univ. Press, 2001), pp. 45–66.

[16] William Diller Matthew, *Climate and Evolution* (New York: New York Academy of Sciences, 1939); and Henry Fairfield Osborn, "Why Central Asia?" *Natural History*, 1926, *26*:266–267. Development of these theories in the Chinese context is discussed in Hsiao-pei Yen, "Evolutionary Asiacentrism, Peking Man, and the Origins of Sinocentric Ethno-Nationalism," *Journal of the History of Biology*, 2014, *47*:585–625.

[17] Steven Harris, "Jesuit Scientific Activity in the Overseas Missions, 1540–1773," *Isis*, 2005, *96*:71–79, on p. 74. For work on the scholarly activity of the Jesuits see also Louis Caruana, "The Jesuits and the Quiet Side of the Scientific Revolution," in

However, despite the wide examination of early modern Jesuit scientific work, its continuation into later periods has often been overlooked. The restored Order of the nineteenth century was active in a whole range of scholarly and educational fields and across the world. The Jesuit revival was particularly marked in China. While the papal Jesuit missions there were terminated with the suppression of the Order in the 1770s, the French branch was able to make extensive new inroads from the 1820s. Jesuit influence stretched beyond France's formal empire, although to a region where informal influence was strong: France held numerous concessions in the treaty port system, and the French state assumed the role of protector of China's Catholics. This offered great scope for French missionary activity and Jesuit scientific work. Many Jesuit institutions were large and renowned. The Zikawei observatory near Shanghai became one of the biggest astronomical centers in East Asia and entered into exchange agreements with a range of naval and meteorological stations.[18] Jesuit scientific institutions, by no means subservient or peripheral, were important international actors. However, they retained a style of scientific work that may seem unusual in narratives of early twentieth-century science, as they continued to bind scholarship with missionary activity, synthesizing both in ways that could engage with other cultures.

THE TRAVELS OF EMILE LICENT: BUILDING A RESEARCH PROGRAM

The museum and Jesuit networks remained quite separate—even if they shared common elements, such as the alignment of scientific and religious personnel and an increasingly global vision. Bringing them together required a particularly proactive individual acting as a "go-between." The role of go-betweens, local actors building connections between disparate regions and contexts, has recently been highlighted by Simon Schaffer and others as extremely significant for widening scientific activity in the decades around 1800.[19] The work of Emile Licent, a Jesuit scholar who came to paleontology almost by accident, demonstrates how such go-betweens could remain significant into the early twentieth century. (See Figure 1.) Licent was able to build a research program in natural history in China by taking advantage of the absence of established Western institutions, while also collaborating with Chinese institutions and expansionist French agencies.

Licent was born in 1876 in northern France and studied natural sciences in the Netherlands, France, and England, eventually specializing in entomology. During these studies, he developed a plan to explore the basin of China's Yellow River. Permission was granted by the Jesuit Order, and Licent arrived in the French concession of the port city of Tianjin, where he was based for the next two decades, in March 1914. Each spring and summer (except during World War I, when he was enlisted into the colonial infantry), Licent set out with a caravan of assistants to collect natural history specimens in the Chinese interior. These expeditions required considerable assistance. Some came from Catholic missionaries and converts, who provided information, supplies, and resting stations. Licent also gained support from state

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Cambridge Companion to the Jesuits, ed. Thomas Worcester (Cambridge: Cambridge Univ. Press, 2008), pp. 243–261; Anna Hosne, *The Jesuit Missions to China and Peru, 1570–1610: Expectations and Appraisals of Expansionism* (London: Routledge, 2013); and Florence Hsia, *Sojourners in a Strange Land: Jesuits and Their Scientific Missions in Late Imperial China* (Chicago: Univ. Chicago Press, 2009).

[18] On the role of the French state in China see Earnest Young, *Ecclesiastical Colony: China's Catholic Church and the French Religious Protectorate* (Oxford: Oxford Univ. Press, 2013). On Jesuit astronomy and meteorology in China see Pyenson, *Civilizing Mission* (cit. n. 5), pp. 157–206; and Robert Bickers and Catherine Ladds, "'Throwing Light on Natural Laws': Meteorology on the China Coast, 1869–1912," in *Treaty Ports in Modern China*, ed. Bickers and Isabella Jackson (London: Routledge, 2016), pp. 180–201.

[19] "Introduction," in *Brokered World*, ed. Schaffer *et al.* (cit. n. 1), pp. ix–xxxviii.

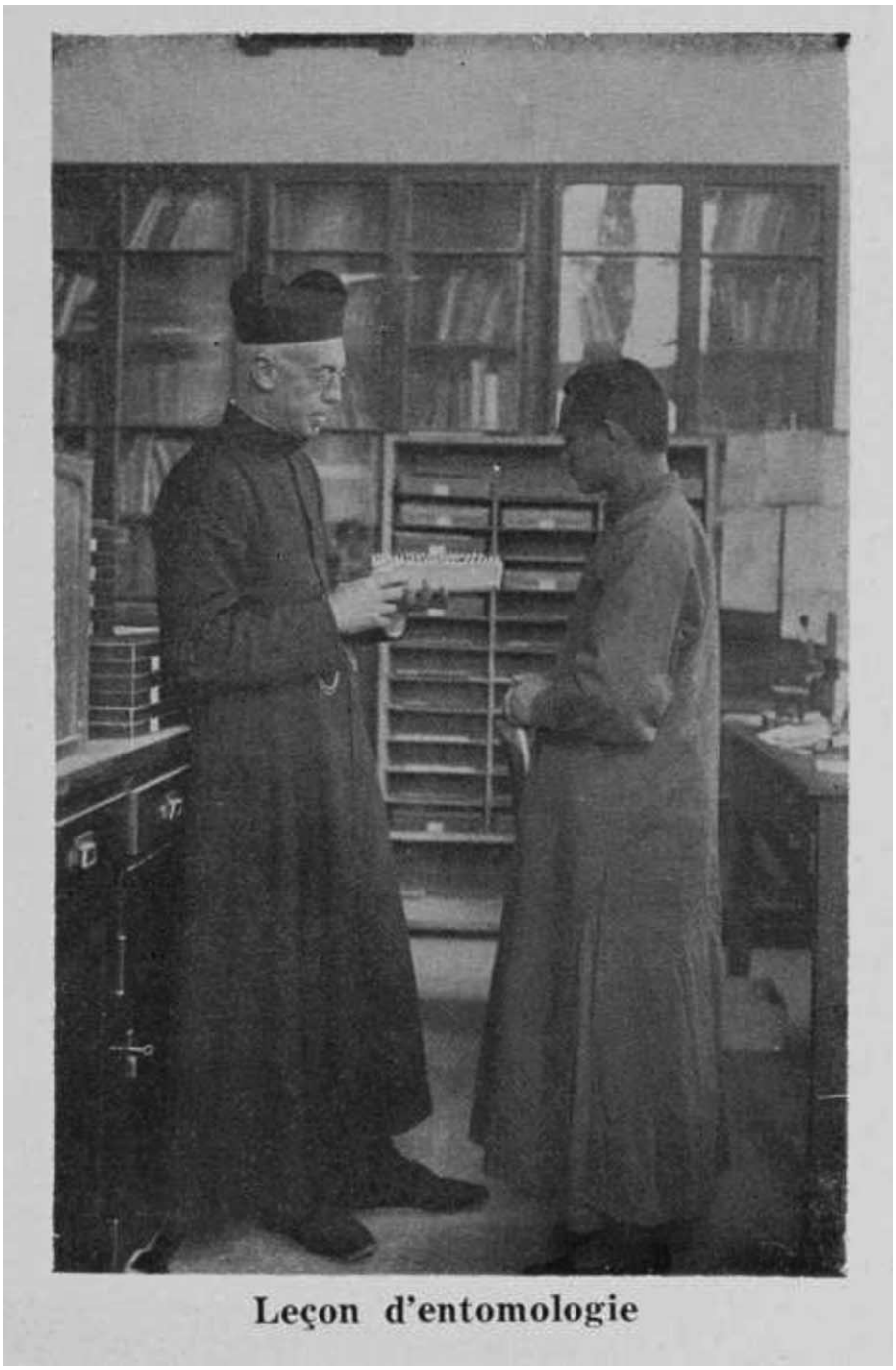

Figure 1. Emile Licent with a Chinese assistant. From Emile Licent, *Vingt-deux années d'exploration dans le Nord de la Chine, en Mandchourie, en Mongolie et au Bas-Tibet (1914–1935): Le Musée Hoang ho Pai ho de Tientsien* (Tianjin, 1936), p. 14. Courtesy of the British Library.

institutions and was granted the title of "Ministerial Councilor" by the Chinese Ministry of Agriculture to smooth his travels, as he continually negotiated for access to territory with warlords and provincial leaders.[20]

Licent aimed to gather as much material and information as possible, cataloguing his travels in two huge volumes.[21] While Florence Hsia has noted that seventeenth-century Jesuit travelogues "presented readers with a tale of exotic travel as compelling as any of the other published [travel] accounts," this was not a tradition continued by Licent. He opened his first volume by stating expressly that it was "not a book of tourism. It is the journal of a naturalist-traveler, whose sole ambition is to be as precise and conscientious as possible. It relates the facts noted on approximately 30,000 kilometers of travel, conducted—notebook in hand—to collect the material of the natural sciences: geology, mineralogy, paleontology, botany, zoology, and ethnology, in all of northern China."[22] Licent gathered huge quantities of objects, including animal skins, botanical and mineralogical specimens, and archaeological artifacts. These collections formed the basis for his Musée Hoangho Paiho (Yellow River and White River Museum), constructed in the Jesuit Mission in Tianjin in 1923.

Licent aimed to gather all the "facts" relating to China's natural history. However, like many scholars in Asia in this period, he was particularly drawn to rich paleontological formations. Finding these depended on missionaries and the local population, with the most dramatic instance being at Sjarra-osso-gol in Inner Mongolia. Licent briefly visited this region in 1920 and excavated a number of fossils. On returning in 1922, he was informed by resident missionaries that a great deal more material had been excavated in his absence by a Mongol landowner named Wansjock and his dependents. This included the complete skeleton of a woolly rhinoceros, several bovids, and some alleged human remains.[23]

Local participation was essential for this paleontological project, as might have been expected from prior studies of European natural historical research in China; this work—as noted by Fa-ti Fan and Erik Mueggler—was usually highly dependent on local assistance and knowledge. Licent's collaborators are striking, though, in that they were apparently motivated by spiritual connections rather than the commercial links that have been emphasized in the historiography.[24] Licent stated that the excavation of fossils had actually inspired Wansjock and his people to convert to Christianity:

> [The people] had seen me two years ago with my caravan full of fossils, which put them in search of fossils of their own. Among them, the friends of Wansjock learned that the banks of Sjarra-osso-gol, in the territories occupied by their herds and crops, were full of the great bones of vanished beasts. Fathers Mostaert and De Wilde took them to the

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[20] Emile Licent, *Comptes rendus de dix années, 1914–1923, de séjour et d'exploration dans le bassin du Fleuve Jaune, du Pai Ho, et des autres tributaires du golfe du Pei Tcheu Ly* (Tianjin, 1924), pp. 16–17. Claude Cuénot, "Le Révérend Père Emile Licent S.J.," *Bulletin de la Société des Etudes Indochinoises*, 1966, 61:9–83, provides a biography.

[21] These volumes were Licent, *Comptes rendus de dix années*; and Licent, *Comptes rendus de onze années (1923–1933) de séjour et d'exploration dans le bassin du Fleuve Jaune, du Pai Ho: Et des autres tributaires du golfe du Pei Tcheu ly* (Tianjin, 1935). They were followed by Licent, *Vingt-deux années d'exploration dans le Nord de la Chine, en Mandchourie, en Mongolie et au Bas-Tibet (1914–1935): Le Musée Hoang ho Pai ho de Tientsien* (Tianjin, 1936), which described the museum collections.

[22] Hsia, *Sojourners in a Strange Land* (cit. n. 17), p. 84; and Licent, *Comptes rendus de dix années*, p. i. (Here and throughout the essay, translations into English are my own unless otherwise indicated.)

[23] Licent, 1 Aug. 1922, in *Comptes rendus de dix années*, p. 1508.

[24] Fa-ti Fan, *British Naturalists in Qing China: Science, Empire, and Cultural Encounter* (Cambridge, Mass.: Harvard Univ. Press, 2004); and Erik Mueggler, *The Paper Road: Archive and Experience in the Botanical Exploration of West China and Tibet* (Berkeley: Univ. California Press, 2011). Commercial considerations are a key theme in both Fan's and Mueggler's books; and most of the connections described in Schaffer *et al*., eds., *Brokered World* (cit. n. 1), have some commercial dimension.

> sites. At first they were cold, even defiant. What were these bones? What did you want with them? What were you scheming to do with our property? But the explanations soon came to bind them closely. It led them to doctrine, and to their conversion. Wansjock declared himself ready to do whatever the priests wanted.
>
> As for his numerous and attractive family of twenty-one people: they unanimously decided to follow their chief. They came to settle closer to the church, on the plain of Boro Balgassoun.[25]

This passage—which departs from Licent's usually dry and unembellished style—showed how Jesuit science was conceived of as a tool of enlightenment and conversion. While lack of records means that it is impossible to hear the Mongol side of the story, scientific and religious work were integrally bound in Licent's mind. Scholarship (even in a potentially controversial field like vertebrate paleontology) led to the spread of Catholicism.

The relationship between Licent and the Mongol villagers seems to have been close. The few passages in Licent's volumes that veer from terse description are his accounts of the Mongol converts. He regarded them favorably, noting how they were more "robust" and morally elevated than the Han Chinese, loving their children and not practicing infanticide. Licent was particularly taken with Wansjock himself, describing him as "an interesting personage . . . it is said that he never laughs. I would refute this, for we became good friends." The scientific relationship was also well developed: Licent spent August–September 1922 at Sjarra-osso-gol, excavating material with Wansjock and his family. In total, fifty-two boxes of fossils were gathered—so much that it was difficult to procure enough animals to transport the material to Tianjin. Licent also noted the potential for future work: "I consider the domain of Wansjock to be particularly rich. . . . It seems possible to reconstruct the history of Sjarra-osso-gol from the end of the Tertiary to modern times."[26]

However, paleontological research required special expertise that Licent did not feel he possessed. While his work was extensive, it was also old-fashioned: Fa-ti Fan has noted how naturalistic exploration in this period was becoming more specialized and collaborative and that "lone explorers were beginning to look more eccentric than heroic." Licent continued this older course but still found that wider links were essential. First, he became connected with the Chinese geological community. As Grace Shen has shown, geology and paleontology were crucial disciplines for the developing Republican Chinese scientific elite.[27] The Geological Survey and the Geological Society of China used geological research as a tool of nation-building: the discipline was based on knowing the national territory and inculcating a disciplined scientific mind-set, but it was also economically useful and could be used to secure a place for Chinese institutions within the international community of scholars. Licent became an important collaborator with the Chinese geologists, exchanging material and delivering talks at their meetings.

Licent also cultivated links with scholars in France and began to send paleontological material to Boule in 1916. He also offered Boule the opportunity to become involved with the Chinese geologists, who were searching for authoritative collaborators to authenticate Chinese fossils. The Geological Society already had an exchange arrangement with Carl Wiman in Uppsala, and Licent contacted Boule to offer him the possibility of joining in this arrangement.

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[25] Licent, 5 Aug. 1922, in *Comptes rendus de dix années* (cit. n. 20), pp. 1510–1511.
[26] *Ibid.*, 5 Aug. 1922, p. 1510, 7 Sept. 1922, p. 1529.
[27] Fan, *British Naturalists in Qing China* (cit. n. 24), p. 159; and Grace Yen Shen, *Unearthing the Nation: Modern Geology and Nationalism in Republican China* (Chicago: Univ. Chicago Press, 2014).

Both Wiman and the Geological Society were enthusiastic (unsurprisingly, given the great prestige of the Muséum in Paris), but Boule found the proposal unacceptable. He wrote to Wiman that while collaboration could be beneficial "in principle," it would be impossible "in practice." Boule insisted that unless all specimens came to Paris to be analyzed by him according to consistent standards, the work would be fruitless and confusing. He rejected working with Wiman and the Chinese geologists, writing that "we shall content ourselves with describing the fossils sent by Father Licent."[28]

International scientific relations remained highly uneven. While scholars in China wanted the recognition of a major authority like Boule, the metropolitan patriarch was reluctant to take any role but that of sole interpreter of knowledge. The rejection ended possibilities for cross-national cooperation, but it gave Licent the opportunity to make his project more French. Indeed, Licent began to appeal to Boule's national sensitivities, noting that "the Americans (of course) and the Germans (which is more remarkable) are not inactive in this country"—thus suggesting that French paleontological work might be outstripped before it had even begun. He also wrote to Breuil that his Musée Hoangho Paiho "will be a French institution, which, I think, might interest Boule to engage and collaborate with," promoting national prestige overseas.[29]

Boule eventually acceded to Licent's request that an "expert palaeontologist come to study this country and my finds." Following the trend of clerical cooperation, Boule sent another Jesuit scientist, Pierre Teilhard de Chardin, who had recently completed his doctorate in paleontology at the Muséum. Unlike Licent, who has been largely ignored in the historiography, Teilhard is well known, having gained a significant profile following the posthumous publication of his philosophical works, including *Le phénomène humain* (1955) and *Le milieu divin* (1957).[30] In addition to being involved in paleontological and paleoanthropological research, Teilhard developed a philosophical system that integrated a mystical form of Catholicism with evolutionary ideas, presenting the whole of Creation as progressing toward eventual union with the divine—another example of the alignment of religious thinking with evolutionary science. However, Teilhard's synthesis led him in unconventional theological directions. Its implications, particularly for the doctrine of original sin, ensured that he was censured by the Jesuit Order, which forbade him to publish any of his religious work or teach in metropolitan France (indeed, this became the main reason for his continued work in China from the late 1920s).

Official Catholicism could accept a geologically old Earth and was becoming more amenable to some mode of developmentalism in life's history. However, this could not be pushed too far, and Teilhard was not the only Catholic writer to be censured on evolutionary matters in these decades.[31] While most cases involved applications of evolutionary theory to humans (which denied special creation), there was also opposition to ideas of radical changes between "kinds" of animals, which went against the substance of the Creation narrative. Licent himself avoided these difficulties by making paleontology as safe as possible, documenting only relatively recent organisms in a nontheoretical manner, with no explanation of how the animals had originated or developed. This parallels the strategies used by early modern Jesuits to engage in controversial sciences like astronomy: simply aiming for the "accumulation of

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[28] Marcellin Boule to Carl Wiman, 20 Oct. 1922, E. Licent (1919–1930) Collection, IPH Archives, Paris (hereafter cited as **Licent Collection**); and Boule to Ding Wengjiang, 18 Dec. 1922, Licent Collection.

[29] Emile Licent to Boule, 11 Aug. 1916, Licent Collection; and Licent to Henri Breuil, 10 Feb. 1921, Licent Collection.

[30] Licent to Boule, 10 Aug. 1920, Licent Collection. See Pierre Teilhard de Chardin, *Letters from a Traveller, 1923–1955* (London: Collins, 1967); and Ursula King, *Spirit of Fire: The Life and Vision of Teilhard de Chardin* (Maryknoll, N.Y.: Orbis, 1996).

[31] For examples see Mariano Artigas, Thomas Glick, and Rafael Martínez, *Negotiating Darwin: The Vatican Confronts Evolution, 1877–1902* (Baltimore: Johns Hopkins Univ. Press, 2006).

data" without any theoretical deductions and thereby sidestepping the need to take positions in controversial debates. However, despite Licent's typological perspective and disinterest in speculation, even he seems to have been enthralled by the possibility of Asia as the site of human origins. He wrote to Teilhard in 1921 with uncharacteristic wonder: "If only you could be here! I believe you would be able to make a magnificent work! . . . We could really come to find, one day or another, Man. What do you say to it?"[32]

THE COURSE AND CONDUCT OF THE FRENCH PALAEONTOLOGICAL MISSIONS

Emile Licent edged toward a research project linking metropolitan institutions in Paris and Jesuit networks in China. In 1923 Teilhard de Chardin arrived in Tianjin to join him on a series of expanded expeditions to the Chinese interior that lasted until 1928, which gained the rather grand title of *Mission paléontologique française* (MPF).[33] Licent, Teilhard, and their local collaborators excavated a series of sites, hoping for evidence of human origins. The expeditions depended on multilevel and often tense negotiations, as the Jesuit scholars engaged with the territory and local populations while communicating by letter with their distant sponsors in Paris. A large amount of material was excavated, but there were also significant difficulties, deriving from the environment, local reactions, and the varying agendas motivating the project.

Funding came from several institutions, including 25,000 francs from the Muséum, 10,000 from the IPH, 14,000 from the Ministry of Public Instruction, and 20,000 from the Loutreuil Foundation.[34] The money had conditions attached. Licent and Boule formally agreed that all unique fossils would be sent to Paris, while any duplicates could remain in Tianjin. Metropolitan authority was assured, although (at least in Licent's view) the Musée Hoangho Paiho was an important partner. Licent not only provided a base but also secured access: the expeditions required intercession from the French ambassador, and negotiations with the warlord Ma Fuxiang (whom Licent had dealt with on prior trips) secured safe passage, a military escort, and a mule caravan.

The MPF was extensive and well equipped compared to Licent's prior travels. However, it was only one of several high-profile Western expeditions in inner Asia in the 1920s. Some of these had general exploratory or archaeological remits, such as those of Sven Hedin and Aurel Stein. However, the largest was another primarily paleontological project, the Central Asiatic Expeditions (CAE) of the American Museum of Natural History, which went to Outer Mongolia from 1921 until 1930. These trips cost $600,000 in total—about 150 times the cost of the MPF—and were much better outfitted, traveling by motorcar rather than mule train and involving fifteen rather than two Western scientists.[35] The CAE also garnered sensational

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[32] Licent to Pierre Teilhard de Chardin, 14 July 1921, in Cuénot, "Le Révérend Père Emile Licent S.J." (cit. n. 20), p. 29. On the "accumulation of data" strategy see Caruana, "Jesuits and the Quiet Side of the Scientific Revolution" (cit. n. 17), pp. 253–255.

[33] These are extensively documented. In addition to archival documents in the IPH, two sets of letters dealing with the expeditions have been published: Pierre Teilhard de Chardin, *Lettres à l'abbé Gaudefroy et à l'abbé Breuil* (Monaco: Rocher, 1988); and Amélie Vialet and Arnaud Hurel, eds., *Teilhard de Chardin en Chine: Correspondance inédite, 1923–1940* (Paris: Edisud, 2004).

[34] "Mission P. Teilhard en Chine," in Licent/Mission Teilhard (1921–1929) Collection, IPH Archives. Licent also gave 6,000 francs for his own expenses.

[35] Meher Manzur, *Exchange Rates, Prices, and World Trade: New Methods, Evidence, and Implications* (London: Routledge, 2002), p. 73, gives a mean franc:U.S. dollar exchange rate of 15.5:1 between 1921 and 1925. The CAE are discussed in Hsiao-pei Yen, "From Palaeoanthropology in China to Chinese Palaeoanthropology: Science, Imperialism, and Nationalism in North China, 1920–1939," *History of Science*, 2015, 53:21–56; and Peter Kjærgaard, "The Missing Links Expeditions; or, How the Peking Man Was Not Found," *Endeavour*, 2012, 36:97–105.

media attention, making global front-page news in 1923 with the discovery of the first dinosaur eggs. The difference in profile and resources was reflected in how the two projects conducted research: the CAE also aimed to find human ancestors but did not neglect other paleontological discoveries. Indeed, their most high-profile finds—dinosaur remains and strange early mammals—were from periods from which no humans were believed to date and were used to generate advertising in the United States and Europe.

Licent and Teilhard's excavations were much more targeted, focusing only on Pleistocene sites thought likely to contain ancient humans. In Licent's journals and letters dinosaur fossils were not a cause for sensational interest but a sign that the locality was too early to be worth excavating. This difference was partly down to resources, as the French missions could cover only limited ground and needed to zoom in on key periods. However, it was also due to different research traditions. French paleontology (including Boule's and Breuil's research) often focused on the Pleistocene, as the records of this period in France were particularly plentiful and it was easily aligned with prehistoric archaeology. Pleistocene sites had a special position for French scholars and provided another research focus: comparing Pleistocene material from France with that of Mongolia. These were regions at the extremities of the Eurasian landmass, and examining similarities and differences between them could shed light on the whole of Pleistocene Eurasia. In some respects this project interpreted Asia as an aspect of a European norm. However, the underlying agenda drove home the importance of Central Asia as an ancient center and the source of now-dispersed life forms.

Working these sites also allowed Licent to take advantage of local collaboration, as the MPF began with a return to Sjarra-osso-gol. Wansjock, "the ever indefatigable paleontologist," had continued excavating in Licent's absence and showed him pottery and fossils on his arrival before assisting in the new excavations. (See Figure 2.) Nor were religious activities neglected. Licent presided over the Feast of the Assumption during the 1923 season and described the celebration, involving music, dancing, and horses, in dramatic terms. The liturgy was "completely Mongol: bright, colorful, smoothly conducted, highly demonstrative, and very pious." This spirituality—simultaneously Catholic and Mongol—displayed the culturally synergistic conversion. However, there were also difficulties. Licent tended to a wounded Mongol who had been shot by bandits but could not treat him fully, as the Mongols remained suspicious of European medicine, and the man eventually died of his wounds. More seriously, one of Wansjock's sons was killed while excavating when a large quantity of earth collapsed on him.[36] Relations were strained afterward, and there was a melancholy tinge to the end of the field season, even though cooperation was maintained.

Interactions with the local Han Chinese were even more problematic. While the main excavation team were Mongol, Licent also hired Chinese diggers and craftsmen. However, ethnic tension meant that "it was better to separate the nationalities." Greater difficulties arose when Licent excavated Neolithic archaeological sites and was subjected to campaigns that opposed disturbing burial grounds. He received a letter from a group of schoolchildren (instigated, he believed, by nationalist agitators), stating that "this land is Chinese, the bones those of our ancestors. None of it concerns you. Why do you steal these bones? Truly you have disgraced our buried brothers and sent their souls into hell." Licent counteracted these claims in a way that parallels wider debates in China over how archaeology related to modern identities. He dismissed any ancestral links, noting that "these tombs have nothing in common with the current population," and highlighted his respect for local patrimony, as "the excavations

[36] Licent, 30 July 1923, in *Comptes rendus de onze années* (cit. n. 21), p. 47 ("indefatigable paleontologist"), 15 Aug. 1923, pp. 51–52 ("completely Mongol"), 9 Sept. 1923, p. 70 (death of Wansjock's son).

Figure 2. Excavations at Sjarra-osso-gol. From Boule *et al.*, *Le paléolithique de la Chine* (Paris: Masson, 1928), Plate III, Figure 3. Courtesy of the British Library.

are conducted with the advice, consent and collaboration of the land's owners."[37] In this way, Licent used his archaeological knowledge and local collaboration to deflect resistance.

Teilhard, who had never visited China before and spoke neither Chinese nor Mongol, faced greater difficulties. He was initially impressed by Licent, writing to Breuil that he "is truly an astonishing traveler, and a stranger to no possible incident on the great roads of China." However, Teilhard's involvement with the local population was primarily a series of frustrated external observations, marked by physical and racial distance. He did not include the detailed and admiring observations of Mongol culture found in Licent's account but only wrote to Breuil that "you would enjoy seeing these bare-chested workers: a very beautiful type of 'red-skin' [*peaux-rouge*], it might be said"—presenting the collaboration through conventional stereotypes of exoticized peoples.[38]

Teilhard's journey to China was initially undertaken for spiritual as well as paleontological purposes, as he hoped to gain insights from Eastern religion. However, he was disappointed,

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[37] *Ibid.*, 6 Aug. 1923, p. 49 ("separate the nationalities"), 12 Sept. 1923, pp. 71 (letter), 72 (Licent's defense). For the wider debates see Fa-ti Fan, "How Did the Chinese Become Native? Science and the Search for National Origins in the May Fourth Era," in *Beyond the May Fourth Paradigm: In Search of Chinese Modernity*, ed. Kai-wing Chow (Lanham, Md.: Lexington, 2008), pp. 183–208.

[38] Teilhard to Breuil, 25 May 1923, 19 Aug. 1923, in *Lettres à l'abbé Gaudefroy et à l'abbé Breuil* (cit. n. 33), pp. 126, 140.

writing to Abbé Christophe Gaudefroy (professor of mineralogy at the Institut Catholique) that "I have not found in the China I have seen the fermentation tank of bubbling wine which I hoped would surge over our West. So far I have only seen endangered or primitive races (the Chinese) that proliferate without giving any sign of any aptitude for creation. Really, I think it is still our old Europe, particularly Paris, which is the bud of present humanity." Far from leading to exchange and cooperation with other cultures, the barriers and disappointments he faced on these journeys confirmed the predominance of the metropole in Teilhard's mind. He was not impressed by the Mongol adoption of Christianity but saw their conversion as coming too late. Although the Mongols were "much more interesting than the Chinese type," they were a "dying race," being forced out of their lands by the encroachments of Chinese agriculture.[39]

Despite these problems in engaging with the local population, much of the specialist scholarship on Teilhard presents this time in the Ordos as key to developing his ideas of cosmic evolution. Teilhard wrote several spiritual works during these expeditions, describing how the isolation of the desert led him to sense the presence of the divine within the terrestrial environment. He was to recall much later that "the East flowed over me in a first wave of exoticism. I gazed at it and drank in eagerly—the country itself, not its peoples or its history (which held no interest for me then), but its light, its vegetation, its fauna, its deserts."[40] While for Licent the relationship between spiritual and scientific thinking took the form of cataloguing creation and spreading knowledge to the local population, for Teilhard it was more about personal introspection and engagement with unfamiliar environments. In Licent's case, travel and movement could lead to the (albeit often tense) collaborative relationships with local knowledge that have recently excited the history of science. However, Teilhard's hopes for a melding of cultures were dashed by difficulties in interaction and his own stereotypes of European superiority; instead he moved toward isolated contemplation of nature.

INTERPRETING THE FINDS

The first season of excavations ended in September 1923 and (despite the tragic death of Wansjock's son) was regarded as a great success. Sixty boxes—weighing over 3,000 kilograms—of fossils and archaeological objects were transported to Tianjin for initial preparation. Given the standards of the discipline, however, this material could be truly understood only in the Muséum d'Histoire Naturelle and the IPH, where it could be compared with paleontological and archaeological material from around the world. Yet despite the importance of metropolitan centralization, the collection of material actually reinforced more diffusionary notions. Rather than presenting the metropole as uniquely dominant, the gathering of specimens furthered ideas of Asia as the center of past life and continued to give scientists based in China an important (although often occluded) role. The practical and mythic dimensions of the discipline coalesced, leading to the imagining of vast processes of mixture, diversity, and movement deep in geological time. The drive to accumulate objects in Europe reinforced the importance of the Asian sites and gave them a deeper significance.

A general description of the material was made in Tianjin and relayed to Paris. A variety of fossil animals were identified, including elephants, equids, bison, ostrich, and rhinoceros. While there were no human skeletal remains, an extensive set of Paleolithic stone artifacts had been discovered. These were contemporary with the extinct animals and indicated that early humans had inhabited the region. While final analysis was reserved for Breuil and Boule,

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[39] Teilhard to Christophe Gaudefroy, 15 Aug. 1923, *ibid.*, p. 25; and Teilhard to Breuil, 19 Aug. 1923, *ibid.*, p. 140.

[40] Quoted in Ursula King, *Towards a New Mysticism: Teilhard de Chardin and Eastern Religions* (Collins: London, 1980), p. 38.

the initial preparation by Teilhard and Licent gave them considerable organizing power over the specimens. First, they judged which were "unique" enough to send to Paris and which were duplicates to be retained for Licent's collections. Second, as Licent and Teilhard made the initial descriptions, they gained control over an important aspect of the discipline: naming specimens. Only one new species was identified, which was named *Bubalus wansjocki*—"Wansjock's bison"—enshrining the local collaboration into the terminology. While this was potentially subject to correction later, the need to present the novelty of the fauna meant that the designation would not be lightly overturned by Boule—who would indeed later describe the animal as named "in memory of the noble Mongol whose assistance enabled the excavations at Sjarra-osso-gol."[41]

Teilhard and Licent returned to the Ordos in following years. (See Figure 3.) However, their reports indicate diminishing returns. In 1924, Teilhard wrote to Breuil that the excavations had "less brilliant results than last year," and in 1926 he informed Gaudefroy that "the seven boxes of fossils contained nothing sensational, and are a repeat of the finds of 1925. But they are for the Muséum." No new animals were discovered, and remains of Pleistocene humans were not forthcoming (with the exception of one dubious incisor). When Licent traveled to Europe in 1925–1926, he encountered an agitated "Professeur Boule [who] stated that I had found 'few things' for the Muséum."[42] The expeditions were not living up to their hoped-for potential.

Yet difficulties were glossed over in the official publication, *Le paléolithique de la Chine*, which appeared in 1928 as a monograph of the IPH. The work was written as a collaborative effort showcasing the expertise of the participants: Boule produced the florid framing introduction; Licent and Teilhard described the excavation sites; Boule and Teilhard wrote the paleontological section; and Breuil analyzed the Paleolithic tools. Metropolitan authority was built into the publication, with Boule and Breuil making the main statements, Teilhard presented as the main fieldworker and paleontological apprentice, and Licent speaking only on matters of geography.

The monograph had a varied tone, mixing typological descriptions of fossils, sites, and tools with enthused conjecture, representing the aforementioned mixture of imagination and scientific rationality in paleontological discourse. The mythic underpinnings were strongly asserted in Boule's opening:

> In all times, Asia—distant and mysterious—has seduced the imagination of thinkers, poets, and scholars, who have invoked it to solve some of the most obscure problems. In this way it has played the principal role in the peopling of our globe, and particularly in the origin, dispersal, and evolution, both moral and physical, of the human groups: *offina gentium*, as has been said and often repeated. . . .
>
> Unfortunately, for proving these ideas, which remain a little theoretical, we lack positive, concrete, and well-established facts. . . . This problem can only be resolved by the methods of geology and paleontology.[43]

Paleontology built on resonant old traditions, using modern science to transform myths into scientific statements. The rationalization also echoed Boule's understanding of the expeditions

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[41] Marcellin Boule and Pierre Teilhard de Chardin, "Paléontologie," in Boule, Henri Breuil, Emile Licent, and Teilhard de Chardin, *Le paléolithique de la Chine* (Paris: Masson, 1928), pp. 27–102, on p. 77.

[42] Teilhard to Breuil, 13 July 1924, in *Lettres à l'abbé Gaudefroy et à l'abbé Breuil* (cit. n. 33), p. 167; Teilhard to Gaudefroy, 12 Oct. 1926, *ibid.*, p. 50; and Licent, *Comptes rendus de onze années* (cit. n. 21), pp. 297–298.

[43] Marcellin Boule, "Introduction," in *Le paléolithique de la Chine* (cit. n. 41), pp. i–viii, on pp. i–ii.

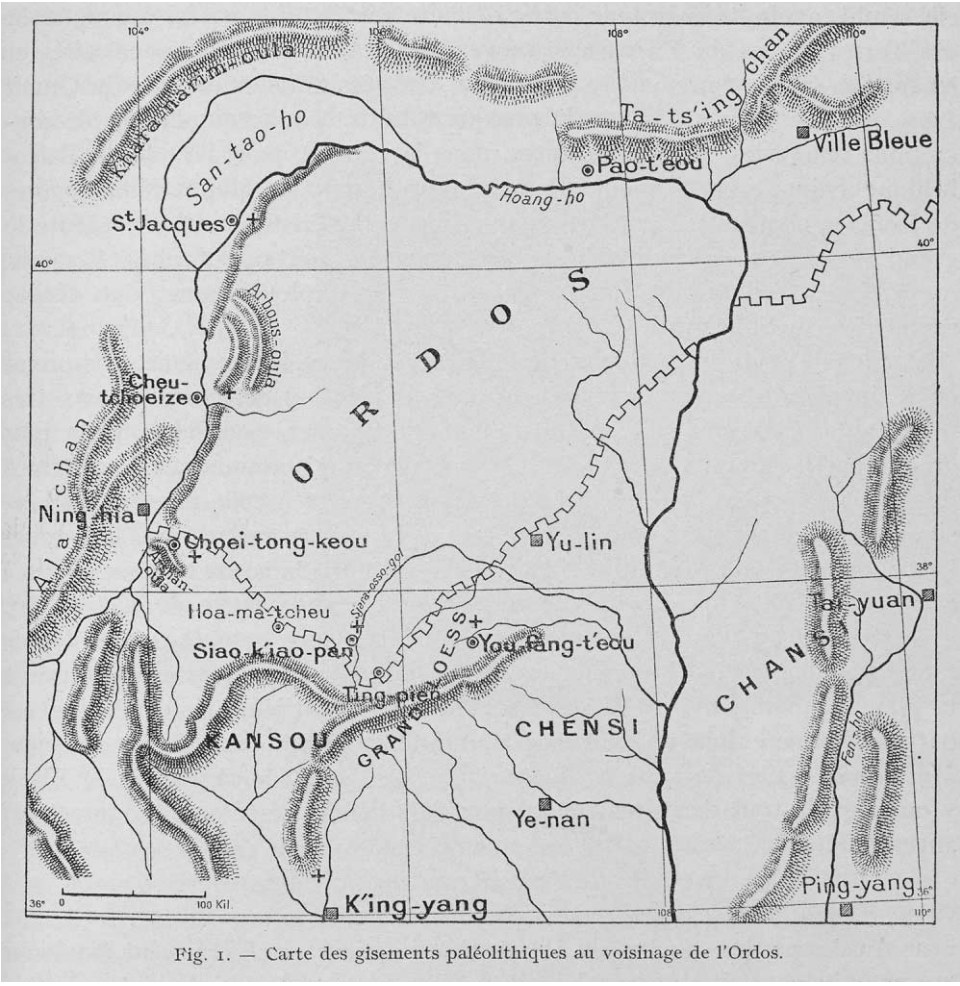

Fig. 1. — Carte des gisements paléolithiques au voisinage de l'Ordos.

Figure 3. Sites in the Ordos visited by the *Mission paléontologique française*. From Boule *et al.*, *Le paléolithique de la Chine*, p. 3. Courtesy of the British Library.

as reliant on local knowledge and clerical activity but nonetheless subordinate to metropolitan authority.

Boule and Teilhard's paleontological account was the most extensive chapter, taking up 75 of the 144 pages. It primarily described the material from Sjarra-osso-gol, a diverse Pleistocene fauna of forty-three animal species. Boule found many of the animals familiar from French sites and noted how "we find here the partition-nostrilled rhinoceros, true horses, large cervids of the *Elaphas* and *Megaceros* types, large primitive cattle, our wolf, our cave hyena."[44] These "European" animals, however, were mixed with other types: there were no mammoths, as found in Ice Age Europe, but warm-adapted straight-tusked elephants and buffalo, ostrich, and antelope, interpreted as representing South Asian animals. Sjarra-osso-gol showed a mixture of types from varied geographic regions.

[44] *Ibid.*, p. vi.

The diverse fauna of Sjarra-osso-gol reinforced ideas of Early Pleistocene Central Asia as a place of origin, where animals had been gathered and then dispersed later in time. Citing related discoveries in Russia and Mongolia, Boule noted that the finds did not just represent "one privileged oasis" but were emblematic of the whole "Sino-Mongolian plain, for the woolly rhinoceros and the buffalo are found associated from the Ordos up to Lake Baikal." The single site typified a vast and diverse region of animal life. Extrapolation and comparison enabled the fauna of Sjarra-osso-gol to represent the whole of Lower Pleistocene Eurasia. This had been a verdant and balanced territory, inhabited by a rich variety of animals. Yet this ancient land of plenty was also understood in terms of fall and decline. The secure climate that enabled the coexistence of these animals was only temporary, and the onset of the Ice Ages caused "a harshening of cold and aridity" and "the impoverishment and expulsion of the Mongolian fauna."[45] As the climate shifted, the environmental unity of northern Eurasia was broken and the animals scattered to new regions, leaving only the desert.

The concept of Central Asia as a zone of origins and migration was also applied to humans. Indeed, Boule opened his account by describing this as the fauna that existed "when Paleolithic man lived in the country." While the expeditions had failed to find human skeletal remains, a large number of Stone Age tools had been located at Sjarra-osso-gol and at Choei-tong-keoi, a site about 100 kilometers west. Following the conventions of Paleolithic archaeology (where tools were always more plentiful than skeletal remains), these objects were judged sufficient evidence for human habitation. Boule argued that the Mongolian tools were similar to later European objects, and so Central Asia must have been where the technologies originated. He identified this site "in the middle of the Asian continent" as "one of those large workshops of development for industrial products which spread, little by little, step by step, to the ends of the distant peninsula"—that is, Europe.[46] Migration from centers was not just for animals, but for human cultures too. And the center of diffusion was Asia. Europe—and all of the sites of the French Paleolithic—was an ancient periphery. To understand European prehistory properly, knowledge of the Asian source was needed, and the ancient development of life and culture had to be understood as a story of migration and diffusion.

Henri Breuil's analysis differed from Boule's, drawing from ideas of ancient cultural variability but also relativizing the European forms. Breuil argued that the artifacts from the two sites actually had quite separate characters. Those from Choei-tong-keoi seemed to mix "European"-style tools with distinctive local forms. The material from Sjarra-osso-gol, meanwhile, was more homogenous, lacking "European" objects; it was also manufactured by more sophisticated techniques, such as bone sharpened by burning (something only seen in Europe with the advent of agriculture). Breuil noted that "based on pure morphology" the objects from Sjarra-osso-gol seemed "more evolved." However, he expressly argued against interpreting the two assemblages in an evolutionary manner. He noted that "our Western prejudices may carry us . . . to suppose that the site of Choei-tong-keoi is older . . . but our prejudices cannot have any value for a region so distant from Europe."[47] "Distant and mysterious" Asia could not be interpreted through a European framework but needed to be understood on its own terms.

Instead, Breuil argued that the two sites were contemporary. Different cultures had inhabited these two regions at the same time, and early progress was not down to steady advance within a single population but was instead due to interactions across cultural groups. As Sjarra-osso-gol showed unique "Asian" objects, while Choei-tong-keoi, to the west, showed a

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[45] Boule and Teilhard, "Paléontologie" (cit. n. 41), pp. 93–94.
[46] Boule, "Introduction" (cit. n. 43), p. viii.
[47] Henri Breuil, "Archéologie," in *La paléolithique de la Chine* (cit. n. 41), pp. 103–136, on pp. 130, 131.

mixture of "Asian" and "European" forms, there was a cultural gradient across Eurasia. Breuil concluded that "at all times, and even today, the circumboreal populations form a human zone which, despite great racial diversity, presents a real ethnographic unity. Even in the upper Paleolithic we are led to recognize that there already existed, in these regions, a positive homogeneity of culture. It is possible to sense, even at this distant epoch, the assimilative influence of migrations across great distances."[48] Like other French scholars in these years, Breuil was moving away from racial typology and rigid social evolutionism, to emphasize pluralism and exchange.[49] Prehistoric archaeology deepened these theories, arguing that human development was characterized by transfer and assimilation across a variety of boundaries over long periods of time.

The metropolitan research therefore gave the human and animal finds a global significance, as indicating expansion and migration. The expeditions that connected the Ordos to France created an image of intermingling animals and human cultures, which followed climate, migration, and development. Studies of Asian sites, and their comparison with Europe, enabled the whole of northern Eurasia to be imagined as a zone of transfer of humans and animals. The research project, based on linking and comparing material from distant regions, led to ideas of connections across deep time. Europe was relativized—in Boule's words—as "an appendix of Asia," subject to migrations and flows from deeper in the landmass.[50] In some respects, this was potentially unsettling to Eurocentric research traditions, which had understood European faunas and tracks of cultural development as the "norm." However, the centrality of Asia was also an evocative possibility, resonating with older mythic presumptions. The diversity of the artifacts and the apparent precedence of Asian material meant that Eurocentric understandings were no longer tenable, and the significance of the research project grew from assertions of its larger, global significance.

THE BREAKDOWN IN RELATIONS

In *Le paléolithique de la Chine*, Marcellin Boule and Henri Breuil presented themselves as the masters of paleontological and prehistoric science, synthesizing the development of nature and culture. The book followed the acknowledged balance of authority within the deep-time sciences and interpreted the material by way of accumulation and comparison. Licent was amenable to the scholars in Paris analyzing the specimens. This was something he believed himself unable to do (and he was also possibly unwilling). The demarcation of interpretative authority between the field and the central collection seems to have been agreed relatively easily. However, the following years saw a breakdown for other reasons, as two institution-building projects—in Paris and Tianjin—came into conflict. The struggle between Boule and Licent was partly over the transfer of specimens, a frequent cause of competition and rivalry in scientific activity.[51] However, it also reflected different conceptions of what national prestige in science actually meant and whether knowledge of the territory and local positioning were as significant as metropolitan consolidation.

Earlier tensions between Boule and Licent over the transfer of objects have already been mentioned. In 1926, to allay these concerns, Licent sent what he billed as a final gift to the Muséum: the skeleton of the rhinoceros unearthed at Sjarra-osso-gol in 1922. Boule was delighted,

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[48] *Ibid.*, p. 121.

[49] Alice Conklin, *In the Museum of Man: Race, Anthropology, and Empire in France, 1850–1950* (Ithaca, N.Y.: Cornell Univ. Press, 2013).

[50] Boule, "Introduction" (cit. n. 43), p. ii.

[51] Burkhardt, "Leopard in the Garden" (cit. n. 9); and Fan, "Circulating Material Objects" (cit. n. 2).

calling it a "magnificent" specimen, to be "assembled in an attitude of life, [and] destined to feature in the gallery of paleontology in our national museum." Moreover, it was the largest woolly rhinoceros displayed anywhere in the world: its skull was 95 centimeters long, while those in Brussels and London were only 80 centimeters and the largest in Russian collections was 93 centimeters.[52] It therefore added significantly to the prestige of the French collections. The specimen also reinforced Boule's scientific conclusions. Similar rhinoceroses were found in Ice Age Europe, and it therefore reflected the common zone of nature across Pleistocene Eurasia. (See Figure 4.) However, the gift of the rhinoceros also represented underlying tensions. Licent was increasingly adamant that there were no more unique specimens and that all new objects should stay in Tianjin.

The rift grew, aggravated by Boule's claims to metropolitan authority and Licent's feelings of entitlement to status. Open conflict erupted with the publication of *Le paléolithique de la Chine*. In Boule's introduction, Licent was cited only as "a collaborator" in a project organized by the Muséum and the IPH for Teilhard de Chardin—as the large metropolitan institution aimed to make "local intermediaries redundant, obscure or subservient."[53] However, Licent's collections and knowledge of the sites meant that he was confident enough to resist this sidelining. He was in China and unable to read the proofs before publication, and was incensed when he saw the volume—especially as he was sent only "*one* copy." He wrote angrily to Boule that this went against their agreements and pronounced the collaboration over. Highlighting his own knowledge and the value of his collections, Licent wrote that

> I shall better protect, in the future, the scientific properties which I have acquired through fifteen years of work, of heavy effort and financial expense. . . . I would like to indicate to you, finally, Monsieur Professor, a point which should not be neglected. This museum and my work interests France as much as China: particularly, it works better for the prestige of French Science, particularly in China, than all the great establishments of the Metropole.[54]

In an indication that the secular/clerical cooperation had broken down, Licent was also aggrieved that Boule had addressed him as "Monsieur" rather than by his proper ecclesiastical title of "Père." After this eruption, matters simmered for a year but then flared up again in 1930, with the publication of *Les mammifères fossiles de Nihowan* by Teilhard and Jean Piveteau, in which Boule personally struck Licent's name from the manuscript while editing the text. Another aggressive letter exchange ensued, with Licent accusing Boule of "scientific dishonesty" and Teilhard desperately attempting to maintain some semblance of peace between the two.[55]

The split between Boule and Licent reflected a clash of egos over status. However, there were also differences in their conceptualizations of what a globally oriented museum should be and what national prestige in science meant. Boule followed a long-standing tradition in French natural history insisting that specimens should be gathered into a single universal

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[52] Boule, "Introduction" (cit. n. 43), p. v; and Boule and Teilhard, "Paléontologie" (cit. n. 41), pp. 31–37 (comparative skull sizes).

[53] Boule, "Introduction," p. iv ("collaborator"); and "Introduction," in *Brokered World*, ed. Schaffer *et al.* (cit. n. 1), p. xxxvii (treatment of local intermediaries).

[54] Licent, 13 Dec. 1928, in *Comptes rendus de onze années* (cit. n. 21), p. 586 (Licent's emphasis); and Licent to Boule, 16 Dec. 1928, Licent Collection.

[55] The dispute between Licent and Boule is discussed in depth in Cuénot, "Le Révérend Père Emile Licent S.J." (cit. n. 20), pp. 41–45; he suggests that it perhaps reflected underlying anticlerical discourse flaring up between the "republican" Boule and Licent.

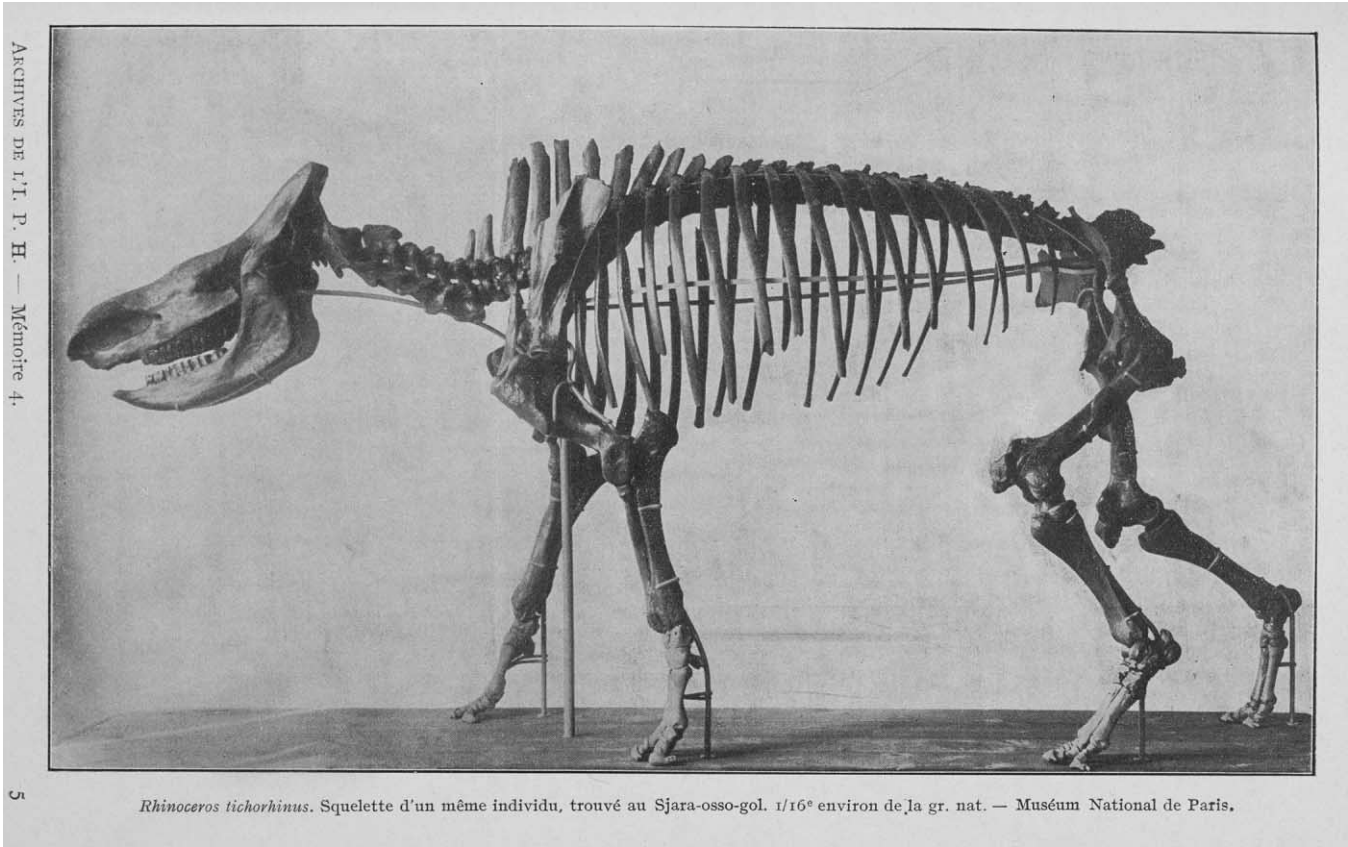

Figure 4. Fossil woolly rhinoceros, mounted in the Galerie de Paléontologie. From Boule *et al.*, *Paléolithique de la Chine*, p. 33. Courtesy of the British Library.

collection; its organization was revealed not only in the arrangement of the Muséum's galleries but also in his own interpretations of fossils as demonstrating links across continents. Licent, however, followed a different agenda, holding that material should remain in the country where it was found and be used for local improvement. His collection in Tianjin would still build French prestige but would achieve this through the education of a foreign population.

The dispute between Boule and Licent reflected wider trends, as actors in non-European regions resisted Western scientific expeditions and their collecting activity. The late 1920s and early 1930s were a period of contestation over archaeological, artistic, and paleontological objects, with proactive campaigns by Chinese organizations to prevent Western explorers from exporting material or conducting research without Chinese participation.[56] These efforts blocked both Sven Hedin and the CAE, but Licent managed to escape censure. As his material remained in Tianjin, he was not subjected to charges of plundering Chinese objects. While Licent did face local resistance during his excavations, the Republican and Nationalist antiquities preservation campaigns were quite amenable to his style of work. As Sigrid Schmalzer and Fa-ti Fan have argued, modernizing Chinese scholars were often enthusiastic about archaeology and utilized it to promote national identity.[57] Many highlighted similar local resistance to excavation as exemplifying the traditionalist obscurantism that modern China needed to overcome. Their claims were based on promoting new international norms of patrimony. Licent seems to have aligned himself with this project and internalized some of its principles, believing that material should stay in China as a tool of improvement—although, as a Jesuit, he saw local improvement as dependent on French Catholicism rather than Republican modernization.

Licent's Musée Hoangho Paiho deserves emphasis, as it was actually a huge and sophisticated operation and became one of the largest collections in East Asia. Its $200,000 operating budget over the 1920s and 1930s approached that of the Zikawei observatory, and it contained a vast accumulation of material. As well as carefully arranged fossils and minerals, it held twenty thousand plant specimens, two thousand fish, three thousand bird skins, four cubic meters of mushrooms, and similar quantities of other material. The museum was also well equipped, with electric lighting, a cinema projector and a study room with a photograph collection, and a staff of twelve Jesuit scientists, four Russian naturalists, and one Chinese secretary. Licent proudly wrote that "through its collections and publications, the Musée Hoangho Paiho is to a large extent one of the founders of paleontology and prehistory in China" and that "one should be able to guess what influence, Catholic and French, the museum has been able to be the instrument of."[58]

However, while this well-funded collection may seem like a crowning point of success, in many respects it reflected Licent's growing isolation. First, it did not have many visitors. The guidebook noted that the public galleries were open only on Wednesday, Saturday, and Sunday afternoons; and "apart from individual visitors, it is estimated that about forty groups of schoolchildren and students per year benefit from the collections." While the museum aimed at meticulous organization, the amount of material on display ensured that the galleries became overcrowded and messy. The standard of reconstruction was also not the same as in Paris. In later expeditions, Licent found two more fossil rhinoceroses, one of which was displayed in the

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[56] Fan, "Circulating Material Objects" (cit. n. 2); and Yen, "From Palaeoanthropology in China to Chinese Palaeoanthropology" (cit. n. 35).

[57] Sigrid Schmalzer, *The People's Peking Man: Popular Science and Human Identity in Twentieth-Century China* (Chicago: Univ. Chicago Press, 2008), pp. 27–33; and Fan, "How Did the Chinese Become Native?" (cit. n. 37).

[58] Licent, *Vingt-deux années d'exploration dans le Nord de la Chine, en Mandchourie, en Mongolie et au Bas-Tibet* (cit. n. 21), pp. 34, 40.

public paleontology galleries. However, it was awkwardly propped up by wooden crates rather than mounted on a sophisticated metal armature. (See Figure 5.) Moreover, all the labels were in French. Licent stated that adding English and Chinese labels would "obscure the display of the objects," but this likely limited the usefulness of the collection for local people, among whom knowledge of French was declining.[59]

More importantly, from the late 1920s the center of paleontological research in China was shifting quite decisively to Beijing, particularly following the "Peking Man" digs at Zhoukoudian, when the networks around the Geological Society (supported by the Rockefeller Foundation) discovered an extensive series of hominin remains. These attracted massive interest internationally and within China: while Licent's collections hosted forty school parties a year, when the first Peking Man remains were displayed in the Geological Society's museum in 1930 two thousand visitors arrived in five days, and casts were sent to major collections around the world.[60] Teilhard de Chardin became increasingly involved in this project, spending most of his time in Beijing and even supervising the excavations in 1933–1934 when there was a gap in the leadership. When Henri Breuil traveled to China, in 1931 and 1935, it was to visit Zhoukoudian and forge connections so the leading Chinese excavators could go to Paris to earn doctorates at the IPH under Boule and Breuil.[61]

Both Teilhard and Breuil remained in contact with Licent and visited his museum, although relations became more distant. Teilhard wrote in 1929 that Licent "becomes nervous, imagining he is marginalized. It is quite painful . . . he is jealous like a tiger in the museum that he sees it as his mission to construct." As the situation in China grew increasingly unstable, Licent became more and more agitated, fearing the theft of his specimens (particularly suspecting the Russian members of staff) and sleeping in the museum's upper galleries with a loaded carbine at hand to protect the collections.[62] In June 1938, with the outbreak of war and following a bout of cholera, Licent left the country, although his collection remained, forming the nucleus of the Tianjin Museum of Natural History. In France he returned to entomological studies, eventually becoming president of the Société Entomologique. He attempted to return to China to resume his work but was unsuccessful. In 1948 he was refused permission by the Order to go back to Tianjin, and the establishment of the People's Republic of China the following year finally ended the period of Jesuit involvement in the country, as China became inaccessible to foreign researchers (and particularly those drawing on colonial linkages).

CONCLUSION

The French paleontological missions show how "traditional" research institutions, like Jesuit networks and universalizing museums, could be active participants in the global expansion of science in the early twentieth century. In some instances their practices and agendas were similar to those of their early modern and nineteenth-century equivalents, linking religious activity with scholarship, relying on brokering "go-betweens," and drawing on formal and informal colonial links that saw fieldwork in regions far from Europe and metropolitan consolidation as essential for the furtherance of science. These older institutions were not static or even,

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[59] *Ibid.*, pp. 36, 23.

[60] "Proceedings of the Seventh Annual Meeting Held in Peiping," *Bulletin of the Geological Society of China*, 1930, 9:1–5. On the "Peking Man" more generally see Jia Lanpo and Huang Weiwen, *The Story of Peking Man* (Oxford: Foreign Languages Press, 1990); and Schmalzer, *People's Peking Man* (cit. n. 57).

[61] Arnaud Hurel and M.-A. de Lumley, "La formation des élites scientifiques chinoises en Europe dans la première moitié du XXe siècle: L'exemple du préhistorien Pei Wen Chung," *L'Anthropologie*, 2005, *109*:195–213.

[62] Teilhard to Gaudefroy, 7 Oct. 1929, in *Lettres à l'abbé Gaudefroy et à l'abbé Breuil* (cit. n. 33), p. 82; and Cuénot, "Le Révérend Père Emile Licent S.J." (cit. n. 20), pp. 23–24 (fear of robbers).

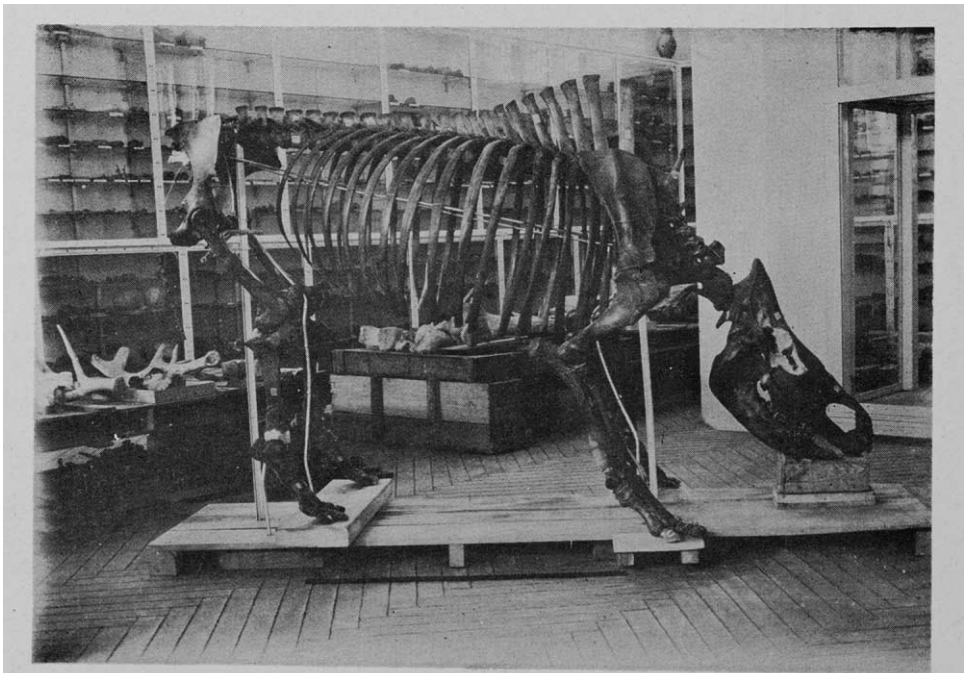

Figure 5. Mounted skeleton of a woolly rhinoceros. From Licent, *Vingt-deux années d'exploration dans le Nord de la Chine, en Mandchourie, en Mongolie et au Bas-Tibet*, p. 15. Courtesy of the British Library.

necessarily, in decline: they interacted with newer formations, such as the Chinese geological societies and large American museums, and in some cases actually served as the basis for new organizations—with the IPH and the Musée Hoangho Paiho, for example, growing out of the Muséum and Jesuit networks. The French institutions often faced significant competition but could still use their established influence to build new linkages and maintain productive research projects. While the MPF did eventually collapse owing to tensions in these alliances, Licent's work was nonetheless able to persist beyond larger, more dramatic, and seemingly more "modern" projects like the American Museum of Natural History's Central Asiatic Expeditions.

Negotiation across a range of levels was essential for this scientific expansion, which bound together a variety of strategies and motivations. The interaction between clerical and secular institutions took advantage of national links and common interests, with Boule and Licent joining in a specifically "French" project that sought to uncover the origins of life. On another level, the excavations themselves depended on local collaboration, which was understood by Emile Licent as promoting enlightenment and Catholicism through a blended Mongol-Catholic culture. The deep-time sciences, which aimed to build national prestige, unveil the mysteries of creation, and enlighten populations, could link these strands together and build collaborations between disparate actors. The rivalries that did eventually develop to destroy this collaborative project were not due to different theories or ideologies but arose over resources, access, and conceptions of what form this improvement should take.

Moreover, global circulation did not just condition the practices and networks of scientific research but also fed into the way this work was conceptualized by its practitioners. The expeditions, which were based on cross-continental links between Europe and Asia, reinforced theories that Eurasia was a common zone of human and animal development. Partly this drew from the colonial scientific practices inherent in the expeditions, which transferred material and objects from field sites in Asia to accumulative centers in Europe and understood natural history in terms of migration and diffusion. However, this was not just a triumphant and straightforward conceptual alignment. The models of diffusion that were bolstered ended up relativizing Europe and emphasizing the significance and centrality of other parts of the world. Whether in Marcellin Boule's understanding of Sjarra-osso-gol as symbolizing the source of all of Eurasia's life forms, Henri Breuil's argument that Stone Age Mongolian artifacts showed independent and variable cultural development, Teilhard de Chardin's spiritual communing with the desert landscape, or Licent's formation of a new "French" museum of objects of the Chinese interior to promote Catholic enlightenment, research in Asia was raised to a high importance. The expansion of science therefore did not just privilege Western centers of accumulation; it marked out the field site in Asia as equal in significance—the original center of the dispersal of life.